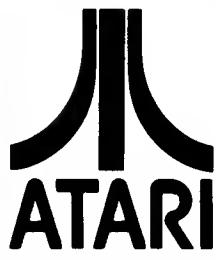


PIN PONG

Operation and Maintenance Manual



Job Title P.C. BOARD ASSEMBLY
PIN PONG - 60 HZ

Dwg. P/L 001660-01

Parts List Specification

sheet 1 of 2

Drawn Cynthia

Checked

Mech. Eng.

Rev.

Proj. Eng.

Elec. Eng.

G

Rev.	Description	Apprv.	Rev.	Description	Apprv.
C	PROD. REL	<i>[Signature]</i>			
D	REV PER ECN 751,811,812	<i>[Signature]</i>			
E	Rev per ECN 926	<i>[Signature]</i>			
F	Rev per ECN 971	<i>[Signature]</i>			
G	REV PER ECN 1071	<i>[Signature]</i>			

Item	Part. No.	Qty.	Description				
1	72062/37-74L00	1	Integrated Circuit,	74L00			
2	72000/37-7400	8	"	"	7400		
3	72001/37-7402	7	"	"	7402		
4	72002/37-7404	5	"	"	7404		
5	72027/37-7408	8	"	"	7408		
6	72003/37-7410	7	"	"	7410		
7	72061/37-7414	1	"	"	7414		
8	72004/37-7420	5	"	"	7420		
9	72006/37-7427	2	"	"	7427		
10	72007/37-7430	2	"	"	7430		
11	72064/37-7432	1	"	"	7432		
12	72008/37-7448	1	"	"	7448		
13	72010/37-7474	20	"	"	7474		
14	72059/37-7485	2	"	"	7485		
15	72012/37-7486	8	"	"	7486		
16	72013/37-7490	4	"	"	7490		
17	72014/37-7493	3	"	"	7493		
18	72015/37-74107	4	"	"	74107		
19	72016/37-74153	2	"	"	74153		
20	72060/37-74164	1	"	"	74164		
21	72035/37-74193	5	"	"	74193		
22	72024/37-9312	4	"	"	9312		
23	72036/37-9314	3	"	"	9314		
24	72017/37-9316	3	"	"	9316		
25	72031/37-9321	1	"	"	9321		
26	72025/37-9322	4	"	"	9322		
27	72026/37-9602	1	"	"	9602		
28	72057/37-LM323K	1	LM323K				
29	72048/37-LM380	1	"	"	LM380		
30	72058/37-MC4024	1	"	"	MC4024		
31	72042/37-MFC6040	1	"	"	MFC 6040		
32	72040/37-CD4016	1	"	"	CD4016		
33	72021/37-NE566	1	"	"	NE566		
34	22103/19-311103	1	Trimpot,	10K			
35	22502/19-311502	1	Trimpot,	5K			
36	22105/19-311105	1	Trimpot,	1M			
37	37000/24-160802	1	Capacitor,	Electrolytic, 8,000 uf, 16V			

PARTS LIST SPECIFICATION

Dwg. P/L 001660-01

Title PCB ASSY. - PIN PONG - 60 HZ

sheet 2 of 2

Rev. G

Item	Part No.	Qty.	Description			
38	35503/24-250501	3	Capacitor, Electrolytic, 500 uf, 25V			
39	35254/24-060251	1	" " 250 uf, 6V			
40	39100/29-001	2	Tantalum, 100 uf, 10V			
41	35506/24-250100	2	Electrolytic, 10 uf, 25V			
42	35472/24-100050	2	" " 5 uf, 16V			
43	35508/24-250010	1	" " 1 uf, 25V			
44	34101/27-101104	16	Ceramic, Disc, .1 uf			
45	32221/27-101224	1	Mylar, .22 uf			
46	30332/28-101471	1	Mica, 470 pf			
47	30101/28-101101	1	" 100 pf			
48	30102/28-101221	6	" 220 pf			
49	71001/31-1N4001	6	Diode, 1N 4001			
50	31-1N161	2	Diode, 1N 1612			
51	71000/31-1N914	15	Diode, 1N 914			
52	71020/32-1N5237	1	Diode, 1N 712 (or 1N 5237), 8.2V Zener			
53	70009/34-2N5190	1	Transistor, 2N 5190			
54	70000/34-2N3643	3	Transistor, 2N 3643			
55	70001/34-2N3544	1	Transistor, 2N 3644			
56	19100/19-808W4P0	1	Resistor, 10 Watt, 4 ohm			
57	12103/11-0151	1	" $\frac{1}{2}$ Watt, 150 ohm			
58	11270/19-839C2P7	1	Carbon, $\pm 5\%$, $\frac{1}{4}$ Watt, 2.7 ohm			
59	11123/10-5123	1	" " " 12K ohm			
60	10101/10-0101	4	" $\pm 10\%$, " 100 ohm			
61	10151/10-0151	1	" " " 150 ohm			
62	10221/10-0221	2	" " " 220 ohm			
63	10271/10-0271	3	" " " 270 ohm			
64	10331/10-0331	7	" " " 330 ohm			
65	10102/10-0102	24	" " " 1K ohm			
66	10103/10-0103	2	" " " 10K ohm			
67	10153/10-0153	2	" " " 15K ohm			
68	10181/10-0181	1	" " " 180 ohm			
69	10472/10-0472	4	" " " 4.7K ohm			
70	10273/10-0273	1	" " " 27K ohm			
71	10473/10-0473	1	" " " 47K ohm			
72	75103/75-916S	2	Nut, Hex, H6			
73	75100/72-1610C	2	Screw, Pan Head, SS, #6-32 x 5/8			
74	75101/75-056	4	Washer, Internal Star, #6			
75	75102/75-016C	2	Washer, Flat, #6			
76	75188/75-1408C	3	Screw, Machine, Pan Hd., #4-40 x $\frac{1}{2}$ ", SS			
77	75164/75-914S	3	Nut, Hex, #4-40			
78	75194/75-054	5	Washer, Internal Tooth Lock, #4-40			
79	75163/75-014S	2	Washer, Flat, #4-40			
80	60000/69-001	3	Switch, DPDT			
81	81001/90-101	1	Crystal			
82	83014/78-06001	1	Wakefield Heatsink			
83	001925	1	Printed Circuit Board, Revision C			
84	79-20102	7	Useco 2006B Terminals			
85	79-58017	1	6 Pin Polarized Male P.C. Conn.			
86	001992	1	Heatsink, Diode			
87	78-16002	A/R	Thermal Conductive Compound			
88	57-216	2	Buss Wire, #16AWG, 1 $\frac{1}{4}$ " Long			
89	75-050	2	Washer, Internal Tooth Lock, #10			
90	75-910S	2	Nut, Hex, #10-32			
91	24-100105	1	Capacitor, Electrolytic, 1 uf, 10V			
92	10-0222	1	RESISTOR, CARBON, 10%, $\frac{1}{4}$ W, 2.2K OHM			



ASSEMBLY TITLE / PIN PONG ELECTRONICS TRAY P/L 001927

PARTS LIST SPECIFICATION

Drawn

Checked

Mech. Eng.

Proj. F

— 8 —

— 1 —

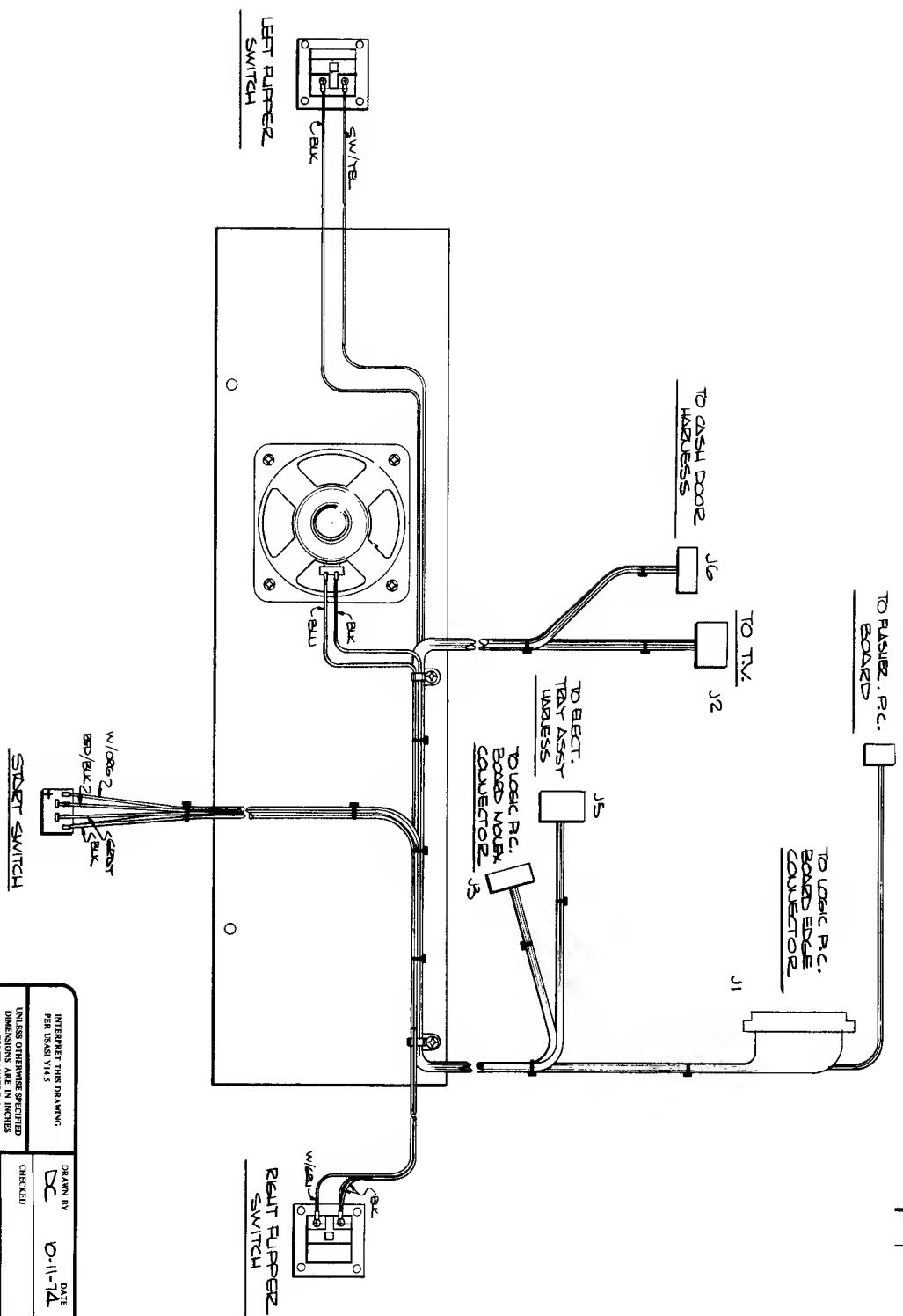
Larry D. Epperson

Elec. Eng

REV.
B

Item	Part Number	Qty.	DESCRIPTION
1	001551	1	Transformer
2	42-70102	1	Transformer
3	90-3001	1	Linefilter
4	79-3201	1	Fuse Holder
5	46-20120	1	Fuse, 2A, Slo-Blo
6	68-001	1	Interlock Switch
7	000268	1	Interlock Switch Bracket
8	72-6608	20	Screw, Sheet Metal, #6, Pan Hd., Phil., $\frac{1}{2}$ "
9	001998	1	Transformer Cover
10	71-301	1	Staple
11	54-401	1	Line Cord
12	002439	1	Harness
13	47-1001	1	Coin Counter
14	75-2824S	1	Machine Screw, #8 x 1 $\frac{1}{2}$ "
15	75-918S	2	8-32 Nut
16	75-018S	3	Washer, #8
17	A001995	1	Tray, Electronics
18	A001920	1	Harness, Voltage Selection
19*	A001921-01	A/R	Shorting Block, 95V
20*	A001921-02	A/R	Shorting Block, 110V
21*	A001921-03	A/R	Shorting Block, 220V (High Line)
22*	A001921-04	A/R	Shorting Block, 220V (Low Line)
23	75-8808	4	Screw, Wood, Flat Hd., Phil., #8 x $\frac{1}{2}$ " Lg.
24	78-25001	A/R	Cable Clamp
25	000871	1	Label
26	79-20101	1	Molex Male Pin 02-09-2011
27	79-58019	1	Molex Plug 03-09-2118

*Install Shorting Block per voltage required



INTERPRET THIS DRAWING PER USAS 14-5	
DRAWN BY D-11-74	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES IN INCHES	
FRACTIONS: $\frac{1}{16}$, $\frac{1}{32}$, $\frac{1}{64}$	
ANGLES: $\pm 1^\circ$	
SURFACE FINISH: $\sqrt{\text{XXX}} \pm .010$	
MATERIAL:	
APPROVED / <i>[Signature]</i>	
CHECKED / <i>[Signature]</i>	
DESIGN ENGINEER / <i>[Signature]</i>	
PROJECT ENGINEER / <i>[Signature]</i>	
DRAWING CONTROLLER / <i>[Signature]</i>	
DOCUMENT CONTROL / <i>[Signature]</i>	
TITLE: ATARI HARNESS INSTALLATION DRAWINGS	
SIZE D	DRAWING NO. 002446
SCALE 1/2	REV. A
SHEET 1 OF 1	

REVISIONS		INITIALS and DATE	
SYM	DESCRIPTION	DRFTG	CHECK
A	1/2" S. C. R.	9-18-74	SPC EC
B	REV REC ECU 916	10-25-74	REC
B	1/2" S. C. R.	11-7-74	REC

C ↓ B A

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Job Title SWITCH ASSEMBLY
PIN PONG

Dwg. P/L 001929

Parts List Specification

sheet 1 of 1

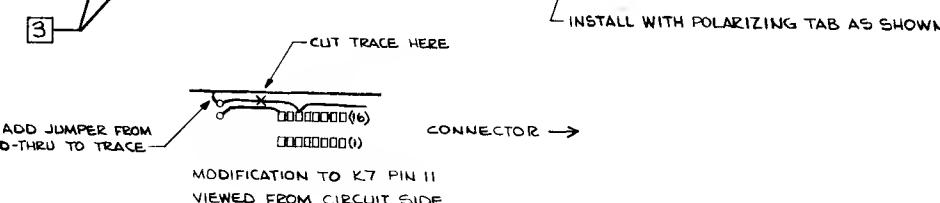
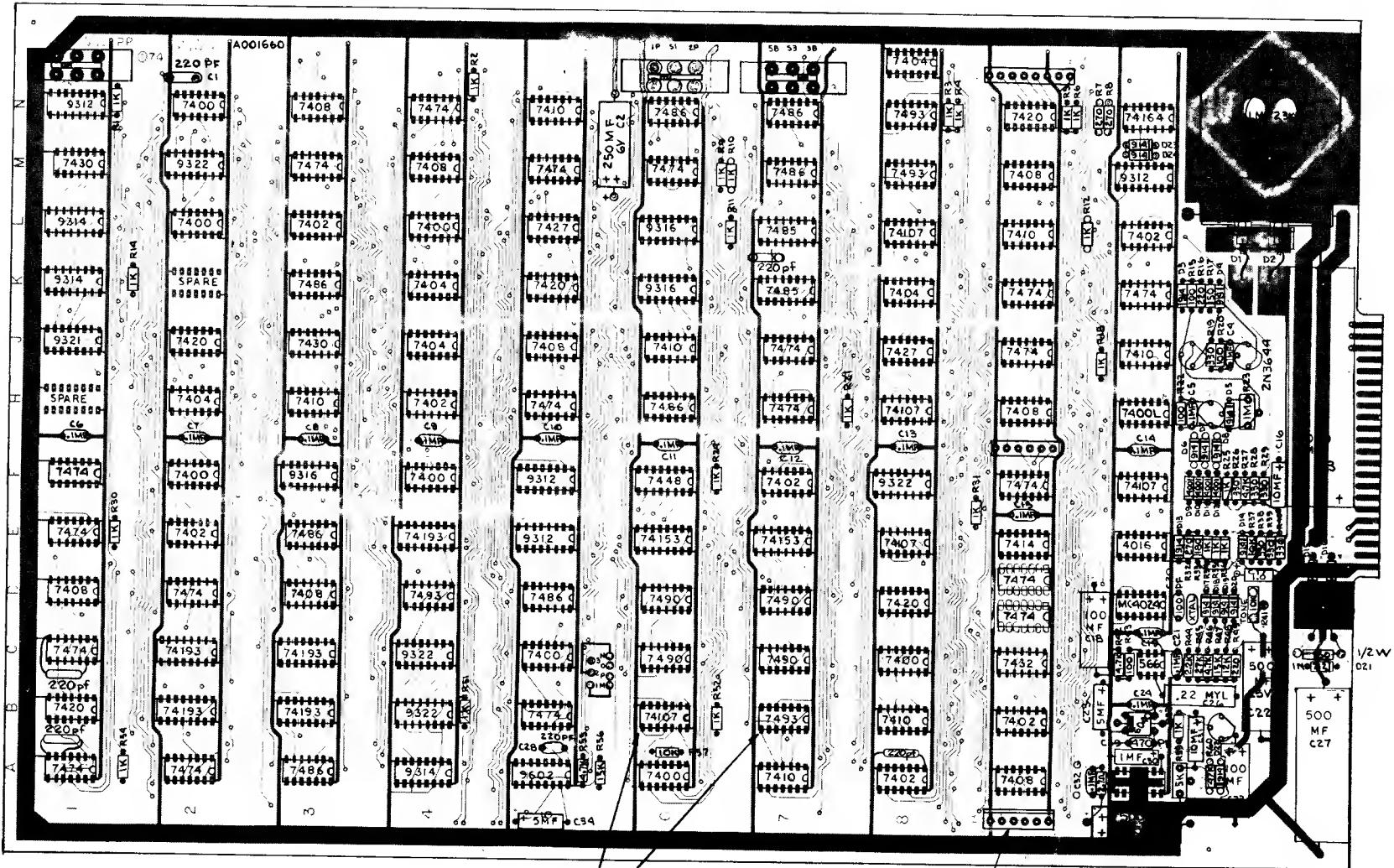
Drawn Cynthia		
Checked	Mech. Eng.	<u>BEN CHAN</u> Rev.
Proj. Eng.	Elec. Eng.	<u>Kerry deppert</u> B

Rev.	Description	Apprv.	Rev.	Description	Apprv.
A	PRE PROD REL 9/23/74	LJ PC			
B	Rev per ECN 916 10/25/74	JRC			
B	PROD REL 11/7/74	ZY			

Item	Part. No.	Qty.	Description				
1	60013/60-0102	1	Switch, Push-button, Rundel (#R2)				
2	60011/60-0301	1	Ring, Anti-Rotation (#SA 19)				
3	60012/60-0401	1	Contact Block, SPST, N.O.				
4	60014/60-0202	1	Cap, Switch (Yellow), #AY 1				
5	001819	1	Bracket, Mounting, Control				

REVISED			
SYN	DESCRIPTION	INITIALS AND DATE	
C	PRODUCTION RELEASE	15%	<i>[Signature]</i>
D	REV. PER ECN 751,811,812	10/23/74	<i>[Signature]</i>
E	REV. PER ECN S20	11/24/74	<i>[Signature]</i>
F	REV. PER ECN 971	11/24/74	<i>[Signature]</i>
G	REV. PER ECN 1071	11/24/74	<i>[Signature]</i>

D



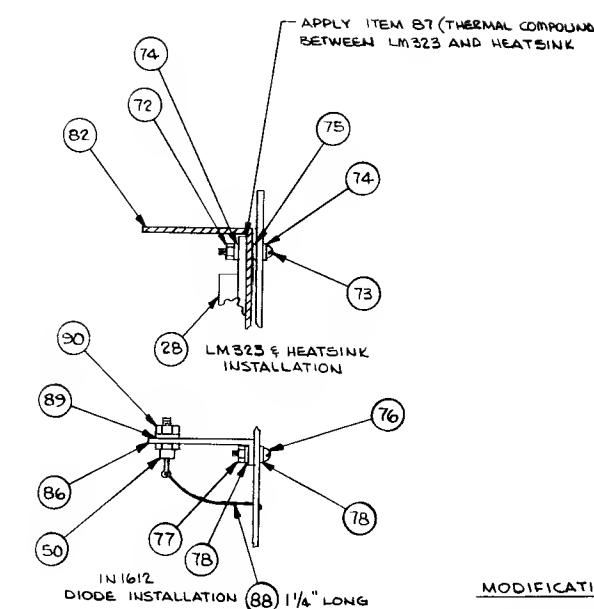
4. FOR 60HZ, SEE P/L 001660-01.
FOR 50HZ, SEE P/L 001660-02.

3. INTEGRATED CIRCUITS B6 (74107) AND B7 (7493) ARE LOADED FOR 50HZ OPERATION ONLY.

2. ALL TRANSISTORS ARE 2N3643.

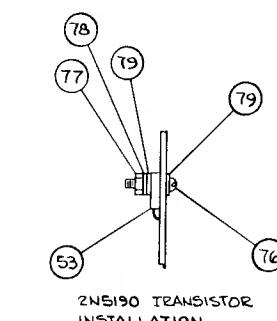
1. ALL DIODE ARE IN914.

NOTES: UNLESS OTHERWISE SPECIFIED.



MODIFICATION LIST

1. ADD 220 pF CAPACITOR BETWEEN PINS 5 AND 7 OF A1.
2. ADD 220 pF CAPACITOR BETWEEN PINS 7 AND 13 OF C1.
3. ON CIRCUIT SIDE OF BOARD, CUT TRACE TO K7 PIN 11 AND JUMPER TO ADJACENT TRACE AS SHOWN.
4. ADD 220 pF CAPACITOR BETWEEN PIN 1 OF AB AND GND BUSS.



INTERPRET THIS DRAWING PER USAF V14.5	DRAWN BY PCS	DATE 9/2/74
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS +0.010 -0.005 ±0.01 ANGLES +0.5° -0.5° ±0.05 SURFACE FINISH ✓ ±0.010	CHECKED <i>[Signature]</i>	DESIGN CENTER <i>[Signature]</i>
MATERIAL 60HZ P/L 001660-01	APPROVED <i>[Signature]</i>	DOCUMENT CONTROL APPLICABILITY NEXT ASSY USED ON APPLICATION
50HZ P/L 001660-02	SIZE B	DRAWN BY A001660
REV G	SCALE 1/1	SHEET 1 OF 1

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C

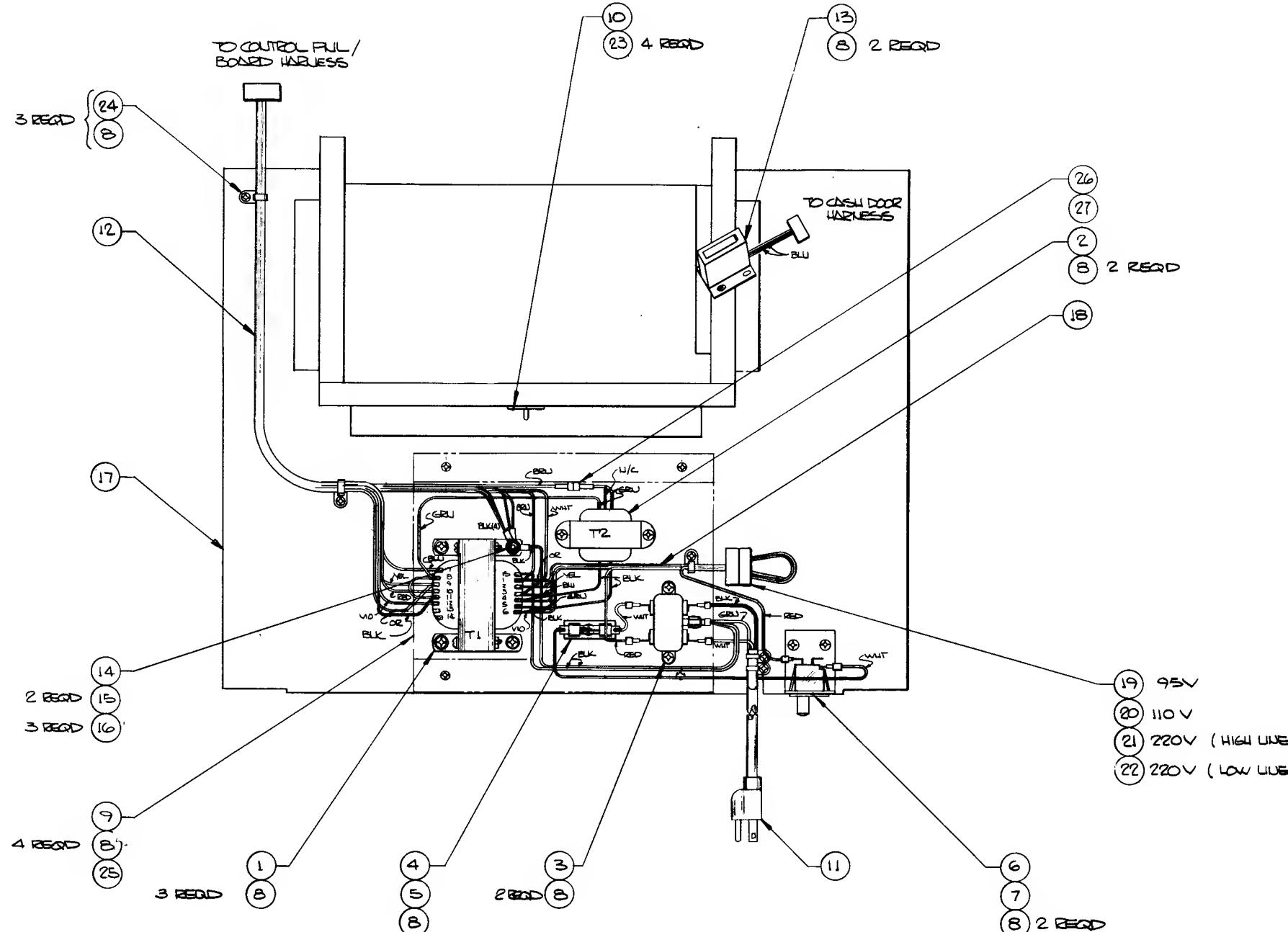
C

B

B

A

A



REVISIONS		INITIALS and DATE		
SYM	DESCRIPTION	DRFTG	CHECK	ENGRG
A	PROD REL	10974	✓	RC
B	REVISED PER ECN 893	10974	✓	RC

DRAWING NO. A001927
1 SHEET REV B

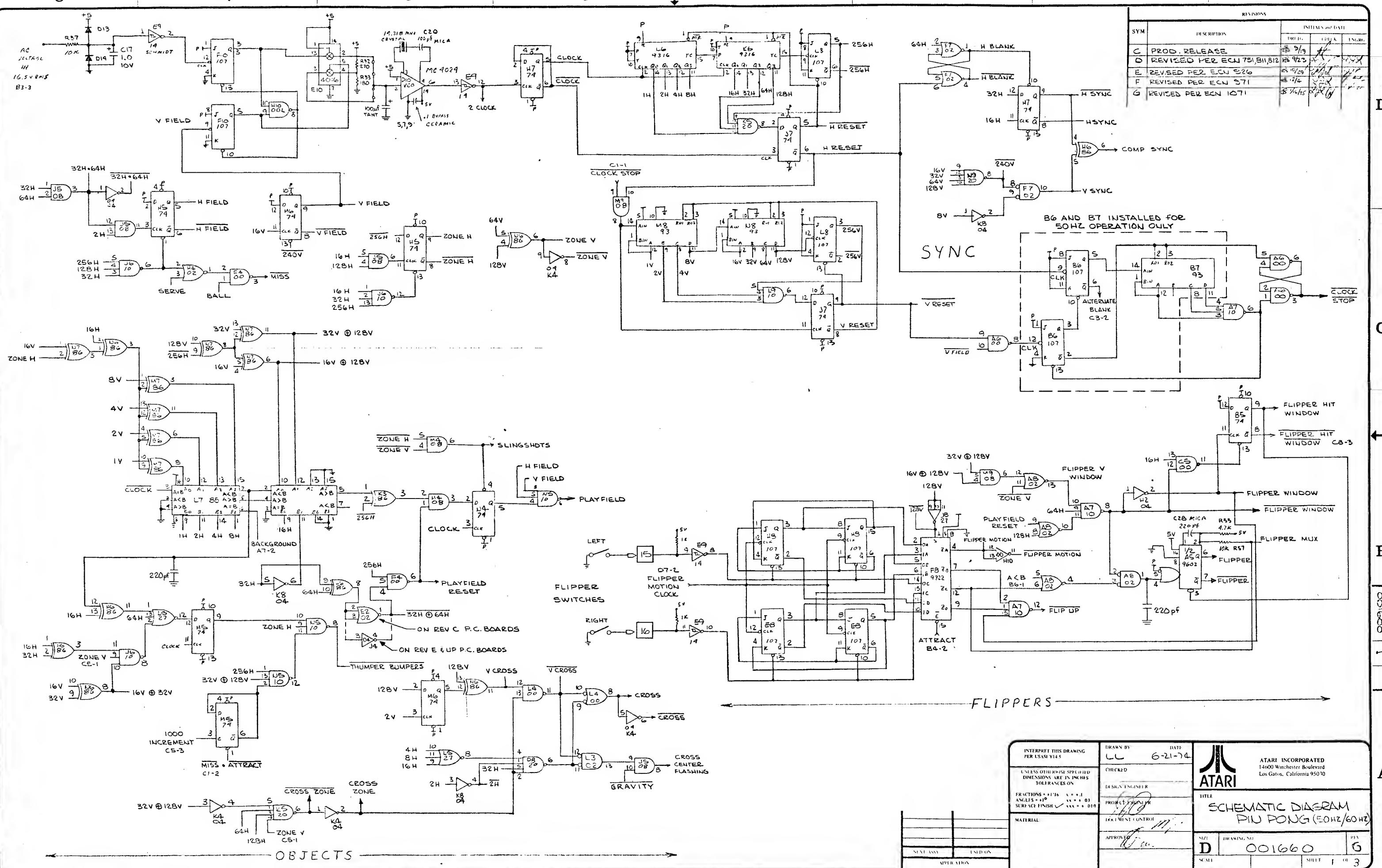
INTERPRET THIS DRAWING PER ASA Y14.5		DRAWN BY <i>DC</i> 10974	DATE 10974
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TOLERANCES ON:	
FRACTIONS + .01/16 - .00 -.01 ANGLES + .1° - .00 -.03 SURFACE FINISH ✓ .000 -.010		DESIGN ENGINEER <i>RC</i>	PROJECT ENGINEER <i>John L. Hayes 10/16/74</i>
MATERIAL: SEE PR 001927		DOCUMENT CONTROL	
APPROVED <i>J. L. Hayes 10/16/74</i>	SIZE D DRAWING NO. A001927	REV B	
SCALE 1/2	SHEET 1 OF 1		

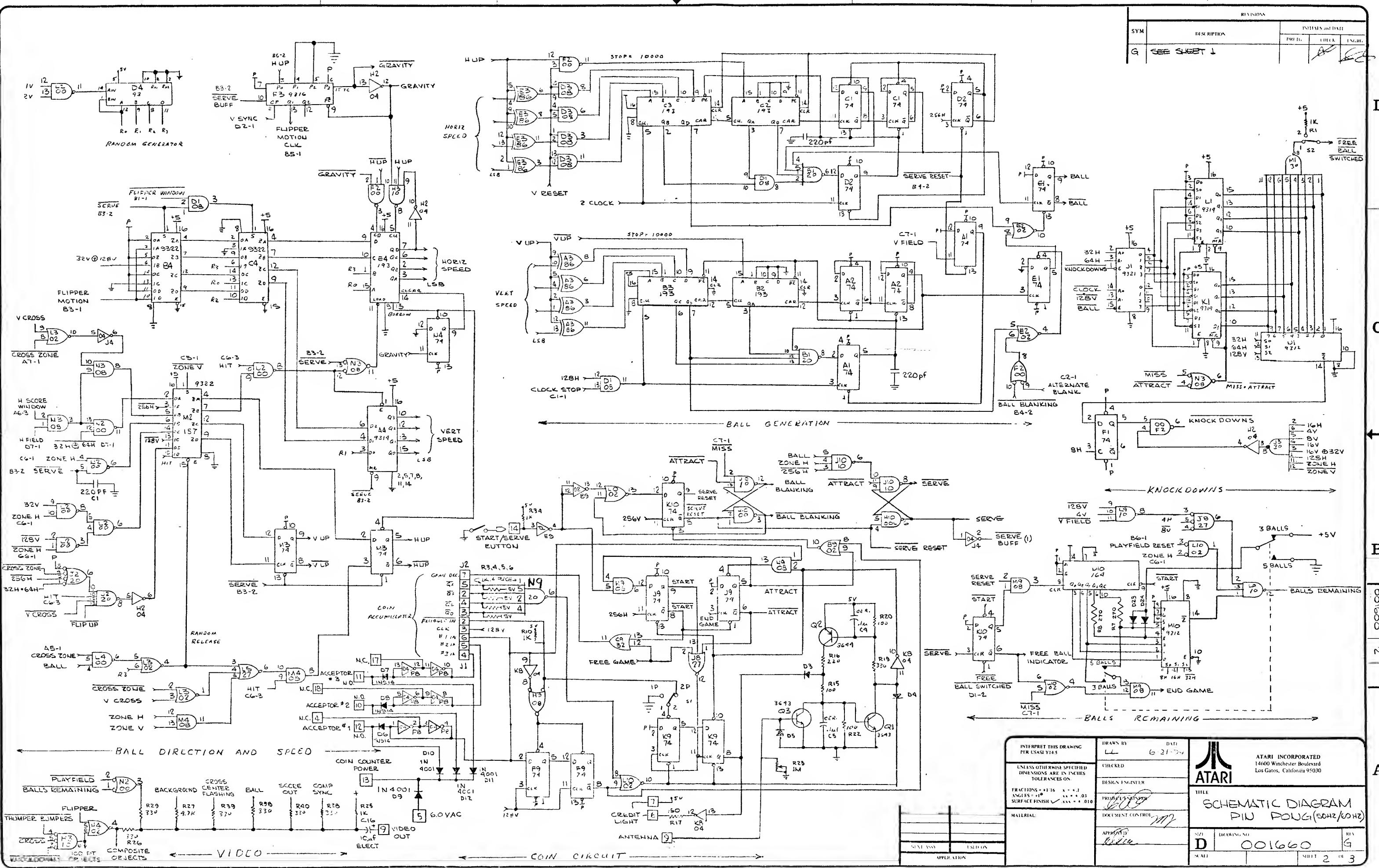
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14600 Winchester Boulevard
Los Gatos, California 95030



TITLE ASSEMBLY,
ELECTRONICS TRAY





8

7

6

5

4

3

2

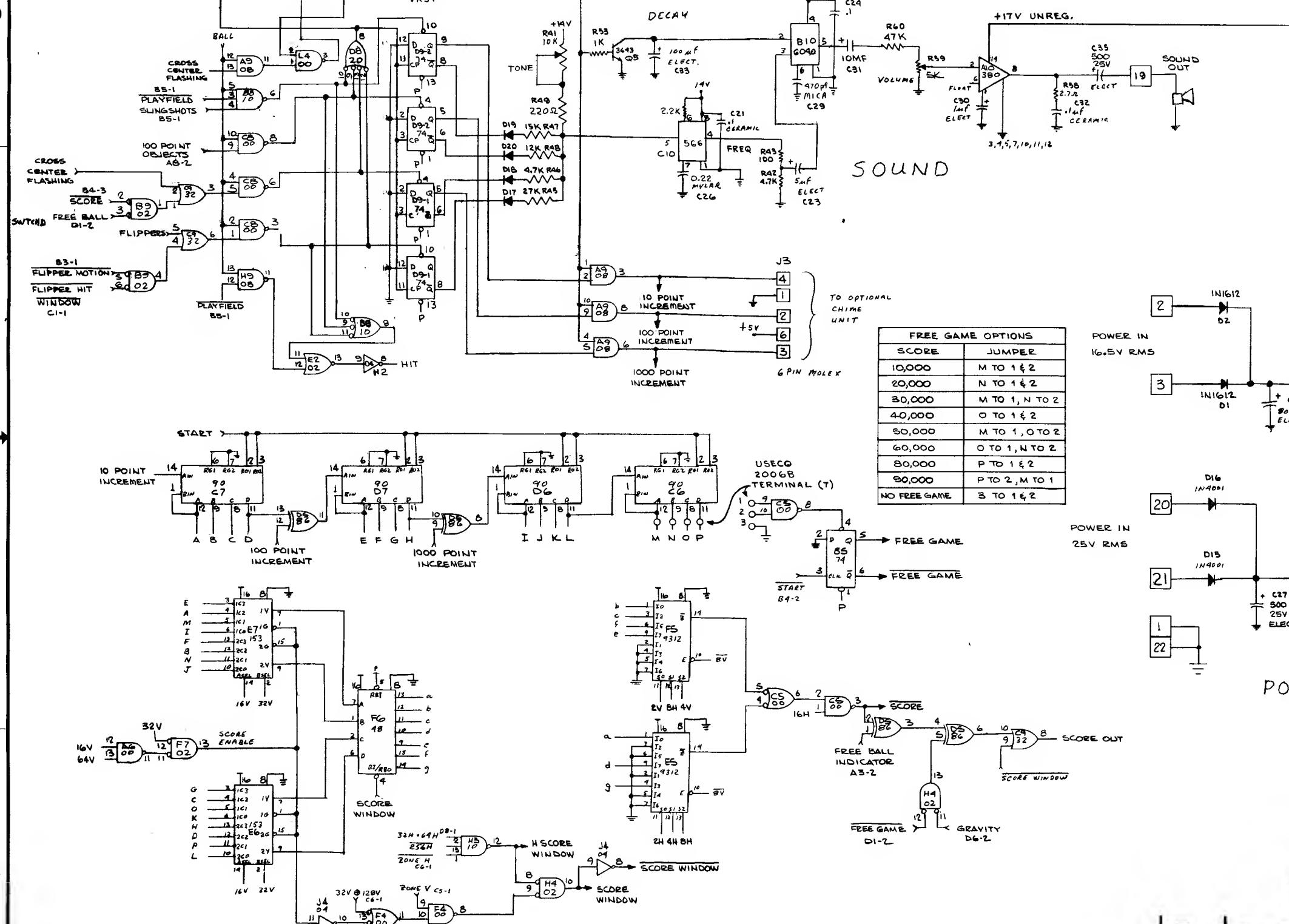
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D

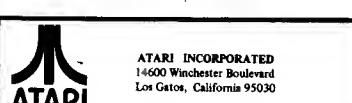
C

B

A



INTERPRET THIS DRAWING PER USAF Y14.5		DRAWN BY LL DATE 6-21-74
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		CHECKED BY [Signature]
FRACTIONS = $\frac{1}{16}$. x = .1 ANGLES = $\pm 1^\circ$. xx = .03 SURFACE FINISH ✓ . xxx = .010		DESIGN ENGINEER [Signature]
PROJECT ENGINEER [Signature]		PRODUCTION [Signature]
MATERIAL DOCUMENT CONTROL 7095/1		APPROVED [Signature]
NEXT ASSY USED ON		APPLICATION
SIZE D DRAWING NO 0001660 REV G		SCALE SHEET 3 OF 3



SCHEMATIC DIAGRAM
PIN PONG (50Hz/60Hz)

8

7

6

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4

3

2

1

REVISONS

SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG	CHECK	ENGRC
B	PROD REL REVISION PER ECN 874	10-15-74	PC	
C	REVISED PER ECN 892	10-21-88	PC	
D	REV PER ECN 1425	5/15/15	PC	

D

D

C

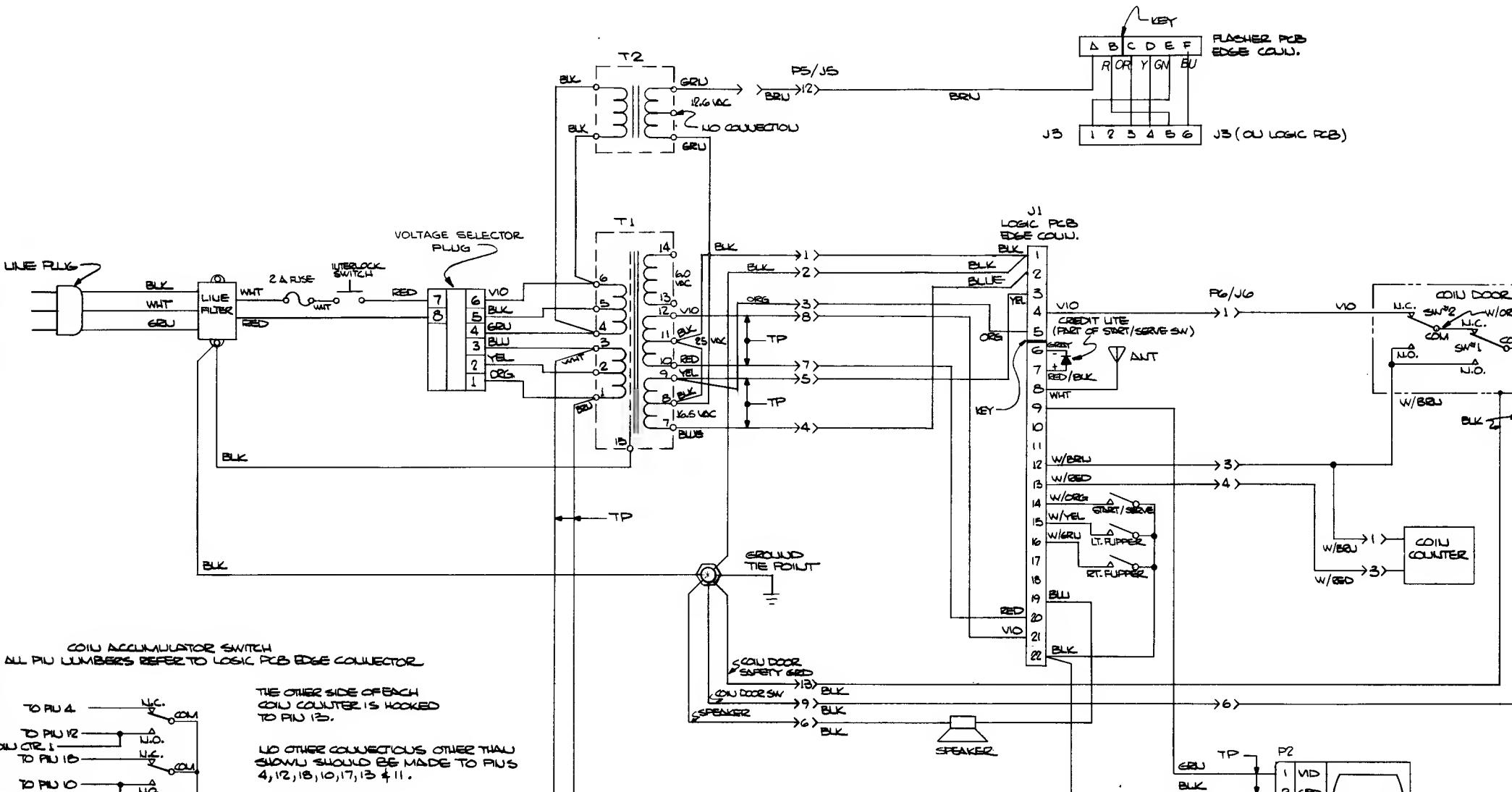
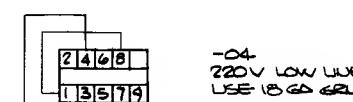
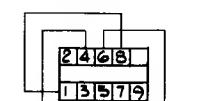
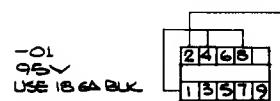
C

B

B

A

A

10 PIU MOLEX VOLTAGE SELECTOR PLUGS

* SEE DRAWING 4001921 FOR FULL DETAIL

INTERPRET THIS DRAWING
PER USASI Y14.5

DRAWN BY	COOK	DATE	10-15-74
CHECKED			
DESIGN ENGINEER	PC		
PROJECT ENGINEER	John Rappaport 10/16/88		
DOCUMENT CONTROL			
APPROVED	Easly		

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WIRING DIAGRAM
PIN PONG

SIZE D DRAWING NO 0001982 REV D

SCALE 1:1 SHEET 1 OF 1